

## **Multivariate analysis discrimination of various cold-pressed lemon oils from different geographical regions.**

### **ABSTRACT**

The main objective of present study was to investigate the influence of geographical region on the flavour compounds of various cold-pressed lemon oils, i.e. Argentinean, Ivory Coast, Italian, Spanish and Uruguayan. Among the flavor compounds, the major volatile flavour compounds from different chemical classes namely monoterpene hydrocarbons (i.e. limonene, sabinene plus  $\beta$ -pinene,  $\gamma$ -terpinene, myrcene,  $\alpha$ -pinene and  $\alpha$ -terpinolene), esters (i.e. neryl acetate and geranyl acetate), alcohol (i.e.  $\alpha$ -terpineol) and aldehyde compounds (i.e. geranial and neral) were composed of > 90% of total volatile flavor compounds of target cold pressed lemon oils. Uruguayan essential oil had the least concentration level of all major classes of flavor compounds except for alcohol compounds; while the highest content of all chemical classes of flavor compounds identified in this study. The principle component analysis (PCA) allowed us to discriminate various cold-pressed lemon oil based on their origin resource, thereby classify their sensorial attributes.

**Keyword:** Cold-pressed lemon oil; Volatile flavour compounds; Monoterpene hydrocarbons; Sesquiterpenes hydrocarbons; Aldehydes, Esters. Alcohols, GC-MS, GC-FID, Alkanes, Principle component analysis.